VADDIO™ WALLVIEW™ HD-18

High Definition PTZ Camera featuring the CONCEAL™ Wall Mounting System and the HD-18 Quick-Connect™ SR

Model Number 999-6905-000 (North America)
Model Number 999-6905-001 (International)

Model Number 999-6905-000W (North America)
Model Number 999-6905-001W (International)
Arctic White Version

HD-18 Quick-Connect SR Interface

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WallVIEW HD-18 Overview

Figure 1: WallVIEW HD-18 PTZ Camera and CONCEAL Wall Mounting System

With the WallVIEW HD-18 PTZ camera and CAT-5 cabling system, Vaddio delivers a system that allows for easy installation and integration of camera systems. The camera is built around a 1.3 megapixel, 1/3" CCD with an 18x optical zoom lens, making it the ideal choice for a wide range of high definition video applications. In addition to the component HD output (720p, 1080i or 1080p), the camera comes with a simultaneous composite SD output (NTSC or PAL).

Because the camera module is built around a CCD image sensor, the HD-18 is excellent in low-light situations, with a 1.8 lux rating. In addition, the video signal to noise ratio output of the camera is greater than 50dB, delivering clean, clear video.

The 7-element Wide Dynamic Zoom lens allows WallVIEW HD-18 to capture a wide angle of view (55.2°) enough to view everyone at a conference room table, as well as capture an individual from a long distance (3.2°). The zoom range provides greater flexibility for a wide variety of applications. Pan range is +170 to -170 degrees, and Tilt range is -30 to +90 degrees.

Paired with the HD-18 camera is Vaddio's Quick-Connect SR breakout box. Installed at the equipment headend, the Quick-Connect SR provides power to the camera and component HD video (no SD output on the Quick-Connect SR) from the camera up to 100 feet over a single CAT-5 cable. In addition, IR signals (modulated or non-modulated) and RS-232 control can be passed from the camera to third-party equipment, such as videoconference codecs on a second CAT-5 cable.

The WallVIEW HD-18 is and exceptional camera system for integration projects, since no power supply is required at the camera location. Use the WallVIEW HD-18 for high definition camera applications, such as houses of worship, corporate boardrooms, live event production and distance-learning.

Intended Use:
Before operating the Vaddio WallVIEW HD-18, please read the entire manual thoroughly. The system was designed, built and tested for use indoors, and with the provided power supply and cabling. The use of a power supply other than the one provided or outdoor operation has not been tested and could damage the camera and/or create a potentially unsafe operating condition.

Important Safeguards:
Read and understand all instructions before using. Do not operate any device if it has been dropped or damaged. In this case, a Vaddio technician must examine the product before operating. To reduce the risk of electric shock, do not immerse in water or other liquids and avoid extremely humid conditions.

Use only the power supply provided with the WallVIEW HD-18 system. Use of any unauthorized power supply will void any and all warranties.

Do not use "pass-thru" RJ-45 connectors. Use standard RJ-45 connectors for best results.

Save These Instructions:
The information contained in this manual will help you install and operate your Vaddio WallVIEW HD-18. If these instructions are misplaced, Vaddio keeps copies of Specifications, Installation and User Guides and most pertinent product drawings for the Vaddio product line on the Vaddio website. These documents can be downloaded from www.vaddio.com free of charge.

UNPACKING:
Carefully remove the device and all of the parts from the packaging.
Unpack and identify the following parts:

- One (1) WallVIEW HD-18 Camera
- One (1) Quick-Connect SR breakout box
- One (1) Vaddio PowerRite™ 24 VDC, 2 Amp Power Supply
- One (1) EZCamera™ Control Adapter (RJ-45 to DB-9)
- One (1) CONCEAL Wall Mounting System and Mounting Hardware
- One (1) AC Cord Set (US - North America or UK & Europe - International)
- Documentation and Manual

Figure 2: WallVIEW HD-18 camera (front)

Front of WallVIEW HD-18

1. Camera – A 1/3”, 1.3 megapixel HD image sensor is combined with an 18x optical zoom lens, for capturing high-quality video.
2. Tally Light – A tally light is illuminated when the camera receives a VISCA command from an external control system and tally is triggered.
3. IR Sensors – Dual IR sensors are built into the front of the WallVIEW HD-18 to receive IR signals from the IR remote control supplied with the camera.
4. Power Light – A power light is illuminated when the camera is turned on.

Compatible Switchers and Joystick Controllers:

ProductionVIEW HD
(999-5600-000)

ControlVIEW XHD
(999-5672-000)

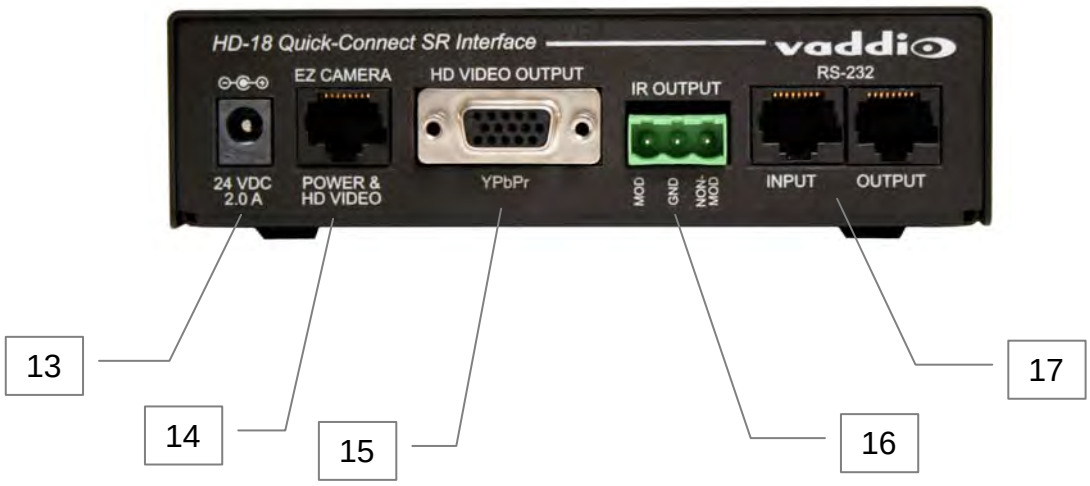
Precision Camera Controller
(999-5700-000)

F ck)
F ck)

Rear of WallVIEW HD-18

5. RS-232 In & IR Out – The RS-232 accepts modified VISCA™ protocol for camera control, as well as transmits IR signaling received by the IR receivers, which can be transmitted to third party devices.
6. DIP Switch Settings – Settings for IR remote, baud rate, SD output format, image flip can be configured on these switches. See page 6 for additional information switch settings.
7. HD Video Select – A rotary switch allows the user to choose the component HD output video resolution and format. See page 6 for additional information on switch settings.
8. 12 VDC Input – NOTE: The power input is not used with the WallVIEW HD-18 system. This is only used on the standard, ClearVIEW HD-18 camera.
9. YPbPr Video Output – Component HD video is fed through the DB-15 connector.
10. SD Video Output – Standard definition video is fed through the BNC connector.
11. EZ Port – CAT-5 cable (up to 100 feet) is connected to the Quick-Connect SR. The EZ-Port supplies power to the camera and delivers component HD video up to 100 feet.
12. Slot for Optional Cards – Optional slot cards can be plugged into the WallVIEW HD-18 camera through the slot in the back of the camera base.

Figure 4: Quick-Connect SR (rear)



13. Power Input – The 24 VDC power adapter powers the Quick-Connect SR and also sends power to the HD-18 camera.
14. Power & HD Video – The CAT-5 connection that extends to the EZ-Port Power/Video connector on the HD-18 camera. Maximum distance on the CAT-5 cable is 100 feet (30.5 m).
15. HD Video Output – DB-15 connector that outputs the component HD video extended from the camera over CAT-5 cabling.
16. IR Output – With the IR pass-thru turned on at the camera (see Camera Settings section), send IR from third-party IR remote controls to third-party equipment, such as videoconference codecs. IR can be transmitted as either modulated or non-modulated signals for added flexibility.
17. RS-232 Input & Output Jacks – When using the IR pass-thru function, the IR signals are pulled from the CAT-5 RS-232 cable and delivered as modulated and non-modulated signals to the IR Output ports.

First Time Set-up with the WallVIEW HD-18:
WallVIEW HD-18 was designed to be exceptionally easy to use and operate. There is documentation at the back of the manual for pin-outs for all of the connectors on the WallVIEW HD-18 camera.

RS-232 Cabling
For RS-232, use a standard Cat-5e cable (568B termination for RJ-45 connectors) from the RS-232 port on the back of a Vaddio ProductionVIEW camera controller or switcher. If the camera will be connected to a third-party control system (such as AMX or Crestron), a DB-9 to RJ-45 adapter cable is supplied with the camera for RS-232. Use of pass-thru RJ-45 connectors should not be used (see notice on page 2).

Videoconference Codecs and RS-232
Depending on the codec that is used, and which RS-232 port is used with a codec, special DB-9 to RJ-45 adapters may sometimes be required. Refer to Vaddio's website for Tech Notes on the WallVIEW HD-18 page on specific diagrams for wiring the camera to videoconference codecs. Any special adapters and configuration information will be noted on the Tech Note.

INSTALLATION
The WallVIEW HD-18 product was specifically designed for installation on a vertical wall surface with Cat-5e cable connectivity for Power, Video and Control signaling (two cables are required). Installation is simplified in that no custom 8-Pin mini-din cables or expensive S-Video plenum cables are needed and no power outlets are required near the camera bracket. All cabling is routed to the head-end using Cat-5e cables.

Getting Started:

First, set up the HD and SD output resolutions for the camera, along with IR output, baud rate and image flip. On the next page are the options for the switches that are found on the back of the camera.

Figure 5: Dip Switch and HD Video Output Resolution Setting Options for the HD-18 Camera

DIP SWITCH SETTINGS

IR 1 1 & 2 UP		IR OUT OFF	9600 bps	SD NTSC	SD 4:3 6 & 7 UP		IMAGE FLIP OFF	TEST BARS OFF	10 OFF
IR 2 ON	IR 3 ON	ON	38400 bps	SD PAL	SD SQ	SD LB	ON	ON	ON
1	2	3	4	5	6	7	8	9	10

HD VIDEO SELECT

0	720p/59.94	8	576i/25
1	1080i/59.94	9	——
2	1080p/59.94	A	——
3	1080p/60	B	——
4	720p/50	C	——
5	1080i/50	D	——
6	1080p/50	E	1080p/30
7	480i/29.97	F	1080p/25

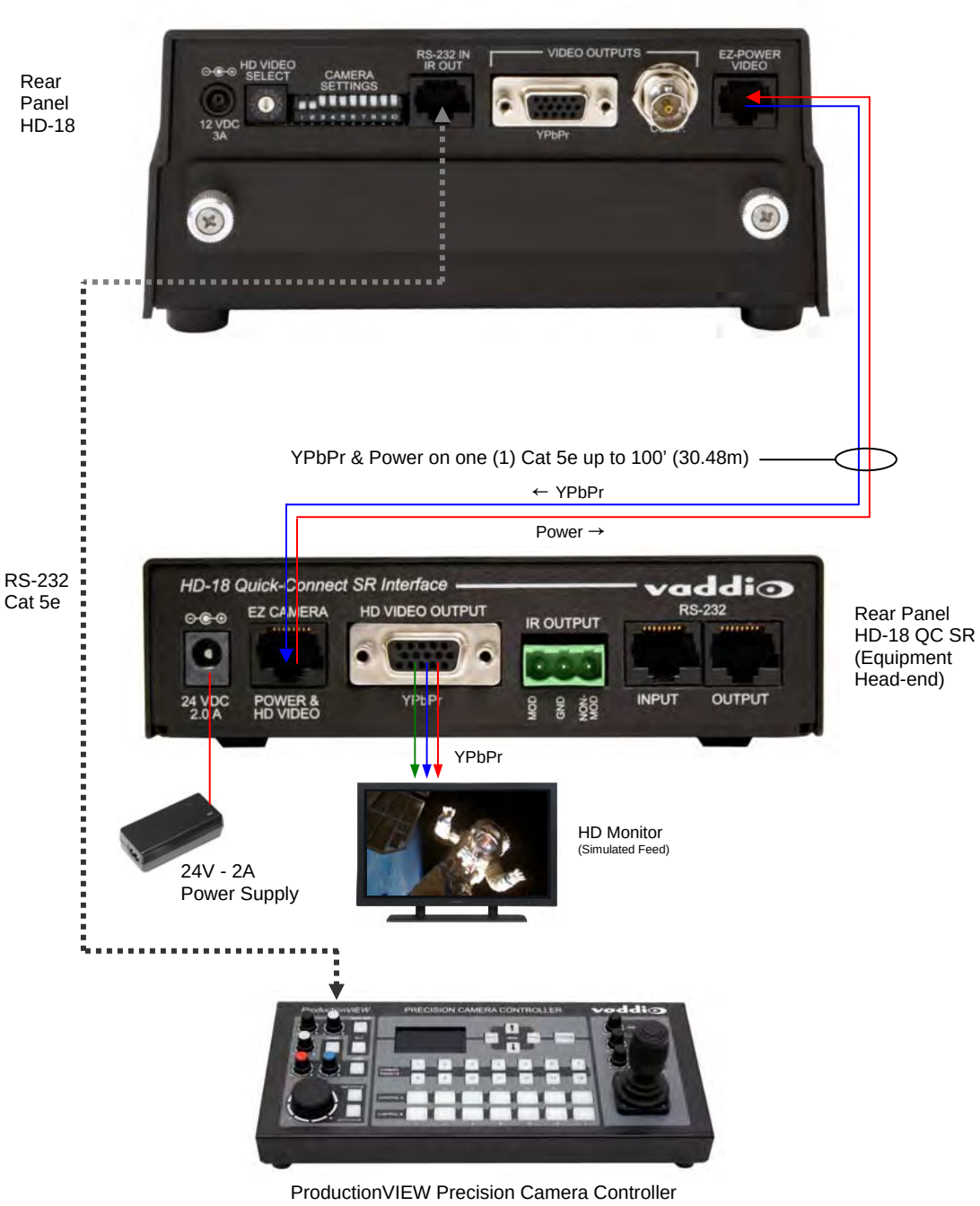
Note: The Test Bars are non standard, but are 75% YCbCr Color Bars and are intended as a convenience for testing the signal path only.

- IR 1, 2 & 3: These settings, using switches 1 & 2, determine the IR frequency of the IR remote control that was supplied with your camera. The IR remote has the capability of operating up to three different PTZ cameras from one remote, using the selector buttons at the top of the remote.
- IR Out: The IR output is sent on the RJ-45, RS-232 jack on the back of the camera. Turning on the IR output will allow IR signals to be transmitted over the CAT-5 cable.
- Baud Rate: The options for baud rate are either 9600 or 38,400 for RS-232.
- SD Output Frequency: Select either NTSC or PAL as the output for the camera's SD signal that is transmitted on the BNC connector.
- SD Output Size: Three options are available for the SD output, select from crop, squeeze or letterbox.
- Image Flip: Turing Image Flip on (switch down), will allow the camera to be inverted.
- Test Bars: Turning this switch on will override the camera video output and send test video bars from the camera to the CCU to allow more accurate setting of the video level at the CCU.
- Switch 10: This switch is unused, and should be left in the OFF position.

Before Installing

- Locate the camera mounting location paying close attention to camera viewing angles, lighting conditions, possible line of site obstructions, and checking for in-wall obstructions where the camera is to be mounted. Pick a mounting location to optimize the performance of the camera.
- Pre-wire all cabling as required (see wiring diagram examples).
- The CONCEAL Wall Mounting System for the WallVIEW HD-18 can be mounted directly to a 2-gang wall box or can be mounted to the drywall using the supplied four (4) drywall anchors.

Figure 6: Standard wiring configuration of the camera to a Vaddio Joystick controller.



ProductionVIEW Precision Camera Controller

Mounting and Installation Instructions for the CONCEAL Wall Mounting System:

Step 1: Determine Camera Mount Location:
When locating the camera, consider viewing angles, lighting conditions, possible line of site obstructions and check for in-wall obstructions where the camera is to be mounted. Pick a mounting location to optimize the performance of the camera. After determining the optimum location of the camera system, route the required two (2) Cat-5e cables from the camera to the head-end.

The two (2) Cat-5e cables should feed-through a 1”(25.4mm) opening (circular or square shape) centered in the rectangular slot located on the rear flange of the CONCEAL Wall Mount Bracket (see Fig. 7).

Note: Do not cut out the entire rectangular slot opening in the wall! This will not allow the two (2) lower wall anchors to correctly fasten the Conceal Wall Mount to the wall (see Fig. 7).

If the bracket is to be mounted on a 2-gang wall box, use the screws supplied with the wall box cover plate to attach the CONCEAL Wall Mount Bracket.

If mounting to drywall with wall anchors, use the four (4) quality wall anchors/screws provided (see Fig. 7). Note: The mounting holes are slotted and are 90° opposing to provide easy leveling. Level the mount and tighten the mounting screws.

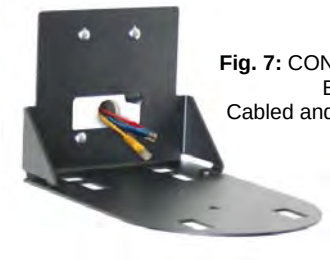


Fig. 7: CONCEAL Wall Mount Bracket: Cabled and Attached to Wall

Fig. 8: Vaddio HD-18 Camera aligned and attached to the CONCEAL Wall Mount Bracket (by two-(1/4”-20) screws in the bottom of the mount)

Note: Check all Cat-5e cables for continuity in advance of final connection. Plugging the EZ POWER/VIDEO Cat-5e Cable into the wrong RJ-45 may cause damage to the camera system and void the warranty!

Step 2: SECURE THE CAMERA TO THE CONCEAL WALL MOUNT BRACKET:
After all cables are attached to the camera, place the camera onto the camera mount and insert the two-(1/4”-20) screws into the camera through the two-screw holes in the bottom of the mount.

Note: Be sure to align each side of the camera evenly to all sides of the CONCEAL Wall Mount Bracket before final tightening of the mounting screws (see Fig. 8).

Step 3: INSTALL THE CONCEAL LOWER COVER PLATE:
Attach lower CONCEAL Lower Cover Plate (see Fig. 9). Slide lower cover plate from front of the mounting bracket toward the rear of the bracket. The two-rear locking tabs will need to be guided into position first and will lock in place as the lower cover plate is pushed toward the rear of the mounting bracket and the front tabs are inserted (see Fig. 10).

Fig. 9: CONCEAL Lower Cover Plate with Locking Tabs

Fig. 10: CONCEAL Lower Cover Plate locked in place

Step 4: INSTALL THE CONCEAL REAR CAMERA COVER:
After successful testing of the camera, install the Conceal Rear Camera Cover on the CONCEAL Mounting Bracket with the supplied screw (see Fig. 11 and 12).

Fig. 11: CONCEAL Rear Camera Cover

Fig. 12: Completed CONCEAL Wall Mount Camera Bracket Installation

Step 5:
Follow the sample wiring diagram on this page for connecting the Cat-5e cables to the camera and Quick-Connect Short Range, using a compatible Vaddio ProductionVIEW joystick camera controller. Additional diagrams are available on our website for installation with a variety of videoconference codecs, utilizing the RS-232 Input and Output connectors for IR signaling.

Note: Check all Cat-5e cables for continuity in advance of the final connection. Plugging the EZ POWER/VIDEO Cat-5e cable into the wrong RJ-45 may cause damage to the camera system and void the warranty.

Step 6:
Connect the Vaddio 24 VDC power supply to an AC outlet. Power will travel down the Power/Video Cat. 5 cable to the camera. The camera will "Home" to a centered position ready for control information from the IR remote control or RS-232 camera controller of the integrators' choice. To insure proper continuity of control and operation of the cameras, the RS-232 controller (control system or joystick) should be powered on after the camera.

IMPORTANT NOTE:
Strain relief for the 15-pin connector is highly recommended on the DE-15 connector on the back of the WallVIEW HD-18 system.

WallVIEW HD-18 General Specifications	
Part Numbers	WallVIEW HD-18 999-6905-000 (North America) WallVIEW HD-18 999-6905-000W (Arctic White - North America) WallVIEW HD-18 999-6905-001 (INT'L) WallVIEW HD-18 999-6905-001W (Arctic White - INT'L)
• **Vaddio ClearVIEW HD-18**	
Image Device	1/3" CCD
Picture Elements	1.3 Megapixels
Signal System	HD: 1080p, 1080i or 720p @ 59.94; 1080p @ 60; 1080p, 1080i or 720p @ 50 SD: Composite NTSC or PAL (simultaneous with HD) NOTE: SD output not on Quick-Connect SR
Lens	18x Optical Zoom
Focal Length	f=4.7 to 84.6mm
Horizontal Viewing Angle	3.2 to 55.2 degrees (16:9)
Frame Delay	1 frame
Video S/N Ratio	>50 dB
Invertible	Yes
Minimum Illumination	1.8 lux
Control Protocol	VISCA
Serial Communication	RS-232 (9600 or 38,400)
Pan Range	+170 degrees to -170 degrees
Tilt Range	+90 degrees to -30 degrees
Pan/Tilt Speed	0.25° to 60° degrees/second
Preset Positions	16 (internal), 6 recalled via IR Remote
Weight	5.8 lbs. (2.63 kg.)
• **Quick-Connect Short Range Interface (SR)**	
Connectors	Power Connector: 5.5mm OD, 2.5mm ID coaxial connector Power/Video RJ-45: Supplies power to, and component HD from the camera, up to 100 feet Video Output: DE-15 connector for HD Analog Component (Y,PB,PR) video only – no SD video IR Output: Transmits modulated or non-modulated IR signals received from the HD-18 IR receiver Control In RJ-45: Accepts RS-232 from ProductionVIEW or other non-daisy-chain control systems Control Out RJ-45: Sends RS-232 from Quick-Connect SR to the camera
Cat. 5 Cable Distance	Up to 100' (30.5m)
Power Supply	24 VDC, 2 Amp
Dimensions	1-RU Rack Mount - 1.75" H x 5.5" W x 6" D (4.45 cm x 14 cm x 15.2 cm)
• **CONCEAL Wall Mounting System for Vaddio ClearVIEW HD-18**	
Dimensions	5.125" H x 6.75" W x 10" D (13 cm x 17.15 cm x 25.4 cm)
Weight	Approx. 2.4 lbs. (1.1kg)

Compliance and CE Declaration of Conformity

FCC Part 15 Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

Operation is subject to the following two conditions: (1) This device may not cause interference, and (2) This device must accept any interference including interference that may cause undesired operation of the device.

Changes or modifications not expressly approved by Vaddio can affect emission compliance and could void the user's authority to operate this equipment.

ICES-003 Compliance

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.
Le présent appareil numérique n'emet pas de bruits radioélectriques dépassant les limites applicables aux appareils numeriques de la classe A préscrites dans le Règlement sur le brouillage radioélectrique édicte par le ministère des Communications du Canada.

European Compliance

This product has been evaluated for Electromagnetic Compatibility under the EMC Directive for Emissions and Immunity and meets the requirements for a Class A digital device. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Standard(s) To Which Conformity Is Declared:
EMC Directive 2004/108/EC

EN 55022 A: 2006 + A1 2007 (CISPR 22:2005/A1:2005) Conducted and Radiated Emissions

- AS/NZS CISPR 22: 2006, Australia and New Zealand - Conducted and Radiated Emissions
- VCCI V-3/2009.04, Japan - Conducted and Radiated Emissions

EN 55024: 1998 + Amendments A1: 2001 + A2: 2003 - Electromagnetic Compatibility - Immunity

EN 61000-4-2 Electrostatic Discharge

EN 61000-4-3 Radiated Immunity

EN 61000-4-4 Electrical Fast Transients

EN 61000-4-5 Surge Immunity

EN 61000-4-6 Conducted Immunity

EN 61000-4-8 Power Frequency Magnetic Field

EN 61000-4-11 Voltage Dips, Interrupts and Fluctuations

Warranty Information:

Hardware* Warranty - One year limited warranty on all parts. Vaddio warrants this product against defects in materials and workmanship for a period of one year from the day of purchase from Vaddio. If Vaddio receives notice of such defects during the warranty period, they will, at their option, repair or replace products that prove to be defective.

Exclusions - The above warranty shall not apply to defects resulting from: improper or inadequate maintenance by the customer, customer applied software or interfacing, unauthorized modifications or misuse, operation outside the normal environmental specifications for the product, use of the incorrect power supply, improper extension of the power supply cable or improper site operation and maintenance.

Vaddio Customer service – Vaddio will test, repair, or replace the product or products without charge if the unit is under warranty and is found to be defective. If the product is out of warranty, Vaddio will test then repair the product or products. The cost of parts and labor charge will be estimated by a technician and confirmed by the customer prior to repair. All components must be returned for testing as a complete unit. Vaddio will not accept responsibility for shipment after it has left the premises.

Vaddio Technical support - Vaddio technicians will determine and discuss with the customer the criteria for repair costs and/or replacement. Vaddio Technical Support can be contacted through one of the following resources: e-mail support at support@vaddio.com or online at www.vaddio.com.

Return Material Authorization (RMA) number - Before returning a product for repair or replacement, request an RMA from Vaddio's technical support. Provide a technician with a return phone number, e-mail address, shipping address, and product serial numbers and describe the reason for repairs or returns as well as the date of purchase and proof of purchase. Include your assigned RMA number in all correspondence with Vaddio. Write your assigned RMA number on the outside of the box when returning the product.

Voided warranty – The warranty does not apply if the original serial number has been removed or if the product has been disassembled or damaged through misuse, accident, modifications, or unauthorized repair. Cutting the power supply cable on the secondary side (low voltage side) to extend the power to the device (camera or controller) voids the warranty for that device.

Shipping and handling - Vaddio will not pay for inbound shipping transportation or insurance charges or accept any responsibility for laws and ordinances from inbound transit. Vaddio will pay for outbound shipping, transportation, and insurance charges for all items under warranty but will not assume responsibility for loss and/or damage by the outbound freight carrier.
• If the return shipment appears damaged, retain the original boxes and packing material for inspection by the carrier. Contact your carrier immediately.

Products not under warranty - Payment arrangements are required before outbound shipment for all out of warranty products.

*Vaddio manufactures its hardware products from parts and components that are new or equivalent to new in accordance with industry standard practices.

Other General Information:

Care and Cleaning

Do not attempt to take this product apart at any time. There are no user-serviceable components inside.

- Do not spill liquids in the device
- Keep this device away from food and liquid
- For smears or smudges on the console, wipe with a clean, soft cloth with a light duty household cleaner that leaves no residue. Repeated use of a "Windex®" type product with vigorous pressure may remove some of the silk screening and this will void the warranty.
- Do not use any abrasive chemicals.

Operating and Storage Conditions:

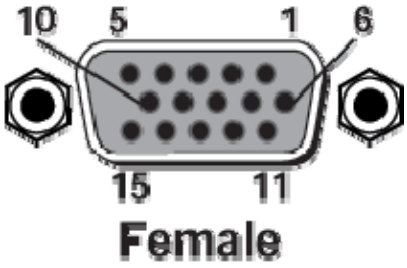
Do not store or operate the device under the following conditions:

- Temperatures above 40°C (104°F) or temperatures below 0°C (32°F)
- High humidity, condensing or wet environments or In inclement weather
- Dusty environments
- Under severe vibration
- Outer Space

Appendix 1:

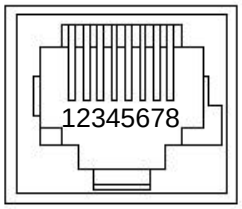
Video Pin-out Table for WallVIEW HD-18

Pin	YPbPr
1	Pr
2	Y
3	Pb
4	-
5	-
6	Pr GND
7	Y GND
8	Pb GND
9	-
10	-
11	-
12	-
13	-
14	-
15	-

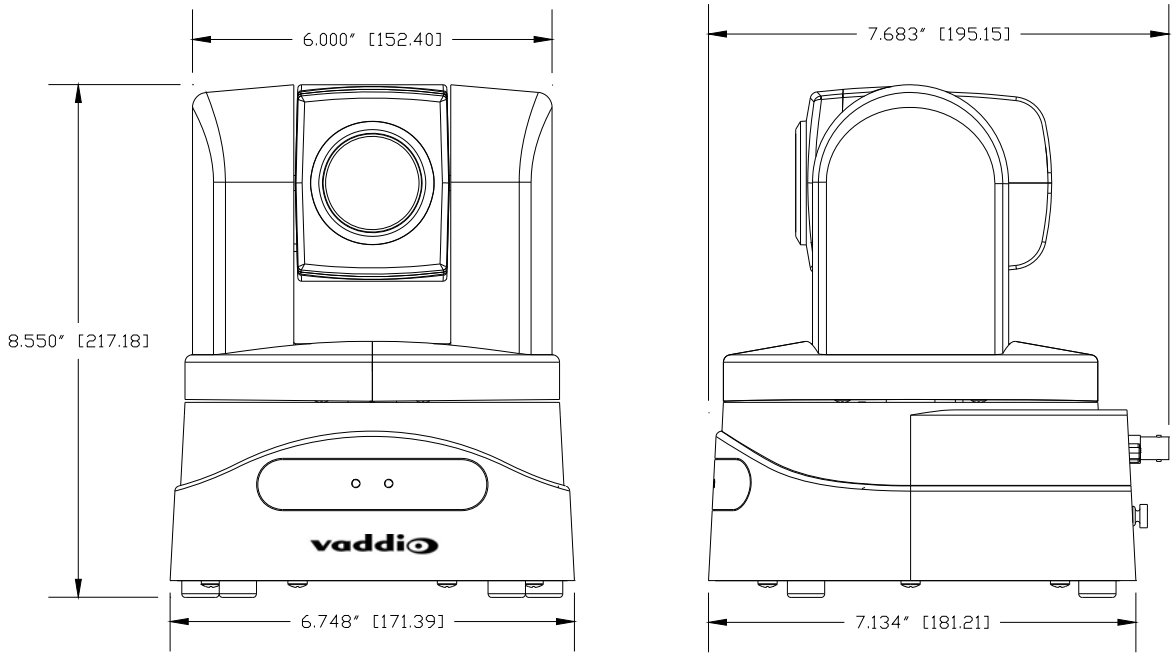


EZCamera Power & HD Video RJ-45 Connector Pin-outs
For HD-18 Camera and Quick-Connect HD-18 SR (568B Wiring Standard)

Pin	YPbPr
1	Power+
2	Power-
3	Y+
4	PB+
5	PB GND
6	Y GND
7	PR+
8	PR-

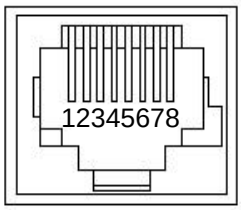


Appendix 2: Camera Dimensions



Appendix 3: Communication Specification

Communication Speed: 9600 bps (default)
Start bit: 1
Stop bit: 1
Data bits: 8
Parity: None
No Flow control



Pin #	RJ-45 RS-232 and IR Out Pins
1)	Unused
2)	Unused
3)	IR Out (TTL level)
4)	IR Output (Diff Signal to HD-18 Quick-Connect)
5)	IR Ground (Diff Signal to HD-18 Quick-Connect)
6)	GND (GND of IR Short Range - Pin 3)
7)	RXD (from TXD of control source)
8)	TXD (to RXD of control source)

NOTE: The Vaddio ClearVIEW HD-18 Control Protocol is similar, but not identical to the Sony™ VISCA™ command set in order to be compatible with several popular control devices. Not all VISCA commands are supported and there are many HD-18 specific commands in the following Command and Inquiry Lists.

HD-18 Command List (1/2)

Command Set	V	Command	Command Packet	Comments
AddressSet	Y	Broadcast	88 30 01 FF	Address Set
IF_Clear	Y	Broadcast	88 01 00 01 FF	I/F Clear
CommandCancel	Y		81 2p FF	p: Socket No(=1 to2)
CAM_Power	Y	On	81 01 04 00 02 FF	Power On/Off
	Y	Off	81 01 04 00 03 FF	
CAM_Zoom	Y	Stop	81 01 04 07 00 FF	
	Y	Tele(Standard)	81 01 04 07 02 FF	
	Y	Wide(Standard)	81 01 04 07 03 FF	
	Y	Tele(Variable)	81 01 04 07 2p FF	p:0(Slow) to 7(Fast)
	Y	Wide(Variable)	81 01 04 07 3p FF	p:0(Slow) to 7(Fast)
	Y	Direct	81 01 04 47 0p 0q 0r 0s FF	pqrs: Zoom Position*
	Y	Direct(Variable)	81 01 7E 01 4A 0V 0p 0q 0r 0s FF	V:(Speed) 0-7
CAM_Focus	Y	Stop	81 01 04 08 00 FF	
	Y	Far(Standard)	81 01 04 08 02 FF	
	Y	Near(Standard)	81 01 04 08 03 FF	
	Y	Far(Variable)	81 01 04 08 2p FF	Supported as 'Standard'
	Y	Near(Variable)	81 01 04 08 3p FF	Supported as 'Standard'
	Y	AutoFocus	81 01 04 38 02 FF	
	Y	ManualFocus	81 01 04 38 03 FF	
	Y	Auto/Manual	81 01 04 38 10 FF	
CAM_WB	Y	Auto	81 01 04 35 00 FF	
	Y	Manual	81 01 04 35 05 FF	
CAM_RGain	Y	Reset	81 01 04 03 00 FF	
	Y	Up	81 01 04 03 02 FF	
	Y	Down	81 01 04 03 03 FF	
	Y	Direct	81 01 04 43 00 0p 0q 0r FF	pqr:000-1ff
CAM_BGain	Y	Reset	8x 01 04 04 00 FF	
	Y	Up	8x 01 04 04 02 FF	
	Y	Down	81 01 04 04 03 FF	
	Y	Direct	81 01 04 44 00 0p 0q 0r FF	pqr:000-1ff
CAM_AE	Y	Full Auto	81 01 04 39 00 FF	Auto Exposure Mode
	Y	Manual	81 01 04 39 03 FF	Manual Control Mode
	Y	Shutter Priority	81 01 04 39 0A FF	Shutter Priority Mode
	Y	Iris Priority	81 01 04 39 0B FF	Exposure Priority Mode (default)
	Y	Bright	81 01 04 39 0D FF	AGC Priority Mode
CAM_Iris	Y	Reset	81 01 04 0B 00 FF	
	Y	Up	81 01 04 0B 02 FF	
	Y	Down	81 01 04 0B 03 FF	
	Y	Direct	81 01 04 4B 00 00 0p 0q FF	pq(0x00-0x11)
CAM_Gain	Y	Reset	81 01 04 0C 00 FF	
	Y	Up	81 01 04 0C 02 FF	
	Y	Down	81 01 04 0C 03 FF	
	Y	Direct	81 01 04 4C 00 00 0p 0q FF	pq(0x00-0x1E)

HD-18 Command List (2/2)

Command Set	V	Command	Command Packet	Comments
CAM_Backlight	Y Y	On Off	81 01 04 33 02 FF 81 01 04 33 03 FF	
CAM_Aperture	Y Y Y Y	Reset Up Down Direct	81 01 04 02 00 FF 81 01 04 02 02 FF 81 01 04 02 03 FF 81 01 04 42 00 00 0p 0q FF	 pq(0x00-0x3F)
CAM_Memory	Y Y Y	Reset Set Recall	81 01 04 3F 00 0p FF 81 01 04 3F 01 0p FF 81 01 04 3F 02 0p FF	p:Memory No(=0-0xf)
CAM_IDWrite	Y		81 01 04 22 0p 0q 0r 0s FF	pqrs:Camera ID(==0000 – FFFF)
IR_Receive	Y Y Y	On Off On/Off	81 01 06 08 02 FF 81 01 06 08 03 FF 81 01 06 08 10 FF	
IR_ReceiveReturn	N+ N+	On Off	81 01 7D 01 03 00 00 FF 81 01 7D 01 13 00 00 FF	
Pan-tiltDrive	Y Y Y Y Y Y Y Y Y Y Y Y Y	Up Down Left Right UpLeft UpRight DownLeft DownRight Stop Absolute Position Home Reset	81 01 06 01 VV WW 03 01 FF 81 01 06 01 VV WW 03 02 FF 81 01 06 01 VV WW 01 03 FF 81 01 06 01 VV WW 02 03 FF 81 01 06 01 VV WW 01 01 FF 81 01 06 01 VV WW 02 01 FF 81 01 06 01 VV WW 01 02 FF 81 01 06 01 VV WW 02 02 FF 81 01 06 01 VV WW 03 03 FF 81 01 06 02 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF 81 01 06 04 FF 81 01 06 05 FF	WW: Pan Speed (0x01-0x18) VV:Tilt Speed(0x01-0x14) YYYY: Pan Position* ZZZZ: Tilt Position*
Tally	Y Y	On Off	81 01 7E 01 0A 00 02 FF 81 01 7E 01 0A 00 03 FF	
Preset Pan Speed	Y	Pan/Tilt Speed	81 01 7E 01 0B WW VV ZZ FF	WW: Pan Speed (0x01-0x18) VV:Tilt Speed(0x01-0x14) ZZ:Zoom Speed(0-7);
Motor Config	Y Y	Hard Motor Stops Soft Motor Stops	81 01 7E 01 70 00 00 FF 81 01 7E 01 70 00 01 FF	
BLK.Enhance	Y	Pedestal	81 01 7E 53 00 00 0p 0q FF	pq: Black Level (0x01-0xFD)
GMA.Enhance	Y	Gamma	81 01 7E 54 00 00 0p 0q FF	pq: Gamma (0x00-0x8F)
CRM.Enhance	Y	Chroma	81 01 7E 55 00 00 0p 0q FF	pq: Chroma (0x08-0x1F)
KNE.Enhance	Y	Knee	81 01 7E 55 00 00 0p 0q FF	pq: Knee (0x0-07F)
CAM_Shutter	Y Y Y Y	Reset Up Down Direct	81 01 04 0A 00 FF 81 01 04 0A 02 FF 81 01 04 0A 03 FF 81 01 04 4A 00 00 0p 0q FF	(Only supported in Shutter Priority Mode) Pq: 0x00-0x0E
CAM_ExpComp	Y Y Y Y Y Y	On Off Reset Up Down Direct	81 01 04 3E 02 FF 81 01 04 3E 03 FF 81 01 04 0E 00 FF 81 01 04 0E02 FF 81 01 04 0E 03 FF 81 01 04 4E 00 00 0p 0q FF	AutoExposure Off AutoExpouse On Pq: 0x00-0x1E
CAM_ICR Cut Filter	Y Y	ICR On ICR Off	81 01 04 01 02 FF 81 01 04 01 03 FF	ICR On ICR Off

Additional Information:

Pan Range: 8044 – 7FBC (-32,700 to +32,700)

Tilt Range: E891 – 4C2B (-5,999 to +19,499)

* Actual Pan/Tilt ranges defined in Inquiry list

HD-18 Inquiry List (1/1)

Inquiry Command	V	Command	Command Packet	Comments
CAM_PowerInq	Y	81 09 04 00 FF	y0 50 02 FF y0 50 03 FF	On Off(Standby)
CAM_ZoomPosInq	Y	81 09 04 47 FF	y0 50 0p 0q 0r 0s FF	pqr: Zoom Position
CAM_WBModeInq	Y	81 09 04 35 FF	y0 50 00 FF y0 50 05 FF	Auto Manual
CAM_RGain	Y	81 09 04 43 FF	y0 50 00 0p 0q 0r FF	pqr:000-1ff
CAM_BGain	Y	81 09 04 44 FF	y0 50 00 0p 0q 0r FF	pqr:000-1ff
CAM_AEModeInq	Y	81 09 04 39 FF	y0 50 00 FF y0 50 03 FF	Auto Exposure Mode Manual Control Mode
CAM_Iris	Y	81 09 04 4B FF	y0 50 00 00 0p 0q FF	pq(0x00-0x11)
CAM_Gain	Y	81 09 04 4C FF	y0 50 00 00 0p 0q FF	pq(0x00-0x1E)
CAM_BacklightModeInq	Y	81 09 04 33 FF	y0 50 02 FF y0 50 03 FF	On Off
CAM_ApertureInq	Y	81 09 04 42 FF	y0 50 00 00 0p 0q FF	pq(0x00-0x3F)
CAM_MemoryInq	Y	81 09 04 3F FF	y0 50 0p FF	p:Memory No(=0-0xf)
CAM_IDInq	Y	81 09 04 3F FF	y0 50 0p 0q 0r 0s FF	pqrs:(0000 – FFFF)
CAM_ReceiveInq	Y	81 09 06 08 FF	y0 50 02 FF y0 50 03 FF	On Off
Pan-TiltMaxSpeedInq	Y	81 09 06 11 FF	y0 50 WW VV FF	WW: Pan Speed (0x01-0x18) VV:Tilt Speed(0x01-0x14)
Pan-tiltPositionInq	Y	81 09 06 12 FF	y0 50 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	YYYY: Pan (0x0100-0x1800) ZZZZ:Tilt (0x0100-0x1400)
TallyInq	Y Y	81 09 7E 01 0A FF	y0 50 02 FF y0 50 03 FF	On Off
PresetSpeedInq	Y	81 09 7E 01 0B FF	y0 50 WW VV ZZ FF	WW: Pan Speed (0x01-0x18) VV:Tilt Speed(0x01-0x14) ZZ:Zoom Speed(0-7);
Motor Config	Y	81 09 7E 01 70 FF	y0 50 00 FF y0 50 01 FF	Hard Motor Stops Soft Motor Stops
BLK.Enhance	Y	81 01 7E 53 FF	y0 50 00 00 0p 0q FF	pq: Black Level (0x01-0xFD)
GMA.Enhance	Y	81 01 7E 54 FF	y0 50 00 00 0p 0q FF	pq: Gamma (0x00-0x8F)
CRM.Enhance	Y	81 01 7E 55 FF	y0 50 00 00 0p 0q FF	pq: Chroma (0x08-0x1F)
KNE.Enhance	Y	81 01 7E 56 FF	y0 50 00 00 0p 0q FF	pq: Knee (0x0-07F)
CAM_AEModeInq	Y	81 09 04 39 FF	y0 50 00 FF y0 50 03 FF y0 50 0A FF y0 50 0B FF y0 50 0D FF	Auto Exposure Mode Manual Control Mode Shutter Priority Mode Exposure Priority Mode AGC Priority Mode
CAM_ShutterPosInq	Y	81 09 04 4A FF	y0 50 00 00 0p 0q FF	pq: ShutterPosition (Only supported in Shutter Priority Mode)
CAM_ExpCompModeInq	Y	81 09 04 3E FF	y0 50 02 FF y0 50 03 FF	On - AE Mode Off Off – AE Mode On
CAM_ExpCompPosInq	Y	81 09 04 4E FF	y0 50 00 00 0p 0q FF	pq: ExpComp Pos -Iris Position
CAM_ICRModeInq	Y	81 09 04 01 FF	y0 50 02 FF y0 50 03 FF	ICR On ICR Off

9433 Science Center Drive, Minneapolis, MN 55428
Toll Free: 800-572-2011 ▪ Phone: 763-971-4400 ▪ FAX: 763-971-4464
www.vaddio.com

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